

REMARKS/ARGUMENTS

Claims 29-45 are pending. Claims 29-42 are rejected under 35 U.S.C. § 103. Claims 29-42 are rejected under 35 U.S.C. § 112. Claims 29 and 40-42 have been amended. New claims 43-45 have been added. No new matter has been introduced in the amended or new claims. Applicants respectfully request reconsideration and allowance of the claims in light of the amendments to the claims and following remarks.

Claim Rejections - 35 U.S.C. § 112

Claims 41 and 42 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Claims 41 and 42 have been amended to clarify the claim language.

Claims 29-42 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 29 and 42 have been amended to clarify the claim language.

Claim Rejections - 35 U.S.C. § 103

Claims 29 and 31-38

Claims 29 and 31-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,251,754 to Ohshima *et al.* ("Ohshima") in view of U.S. Patent 5,141,878 to Benton *et al.* ("Benton") and an article by Moriceau *et al.* "Hydrogen annealing treatment used to obtain high quality SOI surfaces" ("Moriceau"). Claim 29 has been amended to recite, in part, "performing a hydrogen treatment to increase a concentration of hydrogen of said cleaved surface." Support for this amendment is found in the specification, for example, in the paragraph beginning at page 11, line 27.

None of the cited references, either taken alone or in combination, teach or suggest this claim element. Ohshima merely discusses the use of an initial ion implantation step prior to his detachment step so that "a defective layer 18 for detachment use is formed by the implanted ions at a predetermined depth position (for example 1 μm from the surface)."

(Ohshima at col. 8, lines 26-28). There is no discussion of "performing a hydrogen treatment to increase a concentration of hydrogen of said cleaved surface." Thus, claim 29 should be allowable for at least this reason.

Claims 31-38, which depend from claim 29, should be allowable at least for the reason discussed above for claim 29, as well as for the additional limitations they recite.

Claim 30

Claim 30 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ohshima in view of Benton and Moriceau and in further view of an article by Tate *et al.* ("Tate"), "Defect reduction of bonded SOI wafers by post anneal process in H₂ ambient." The Examiner stated that "Tate specifically teaches that rapid thermal annealing works to reduce surface roughness of cleaved SOI substrates in a hydrogen containing etchant." (Office Action at page 6, paragraph 8).

The Applicants respectfully reassert the argument previously made in the amendment mailed September 24, 2003. Although Tate discloses the use of a rapid thermal anneal (RTA) process to perform defect reduction, Tate does not teach or suggest the use of a H₂ anneal "to reduce said first surface roughness value" as recited, in part, in amended claim 29, on which claim 30 depends. Tate does not teach or suggest that there is a correlation between defect reduction and surface smoothness.

In addition, none of the cited references, either taken alone or in combination, teach or suggest "performing a hydrogen treatment to increase a concentration of hydrogen of said cleaved surface" as recited, in part, in claim 29, on which claim 30 depends.

For at least these reasons, claim 30 should be allowable.

Claim 39

Claim 39 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ohshima in view of Benton and Moriceau and in further view of European Patent Application EP 0 553 852 A2 to Sato *et al.* ("Sato"). Claim 39, which depends from claim 29, should be allowable for at least the reason stated above for claim 29, as well as for the additional limitations it recites.

Claims 40-42

Claims 40-42 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ohshima in view of Benton and Moriceau as applied to claim 29 above, and further in view of Applicant's admitted prior art (APA).

Claim 40-41, which depend from claim 29, should be allowed for at least the reason stated above for claim 29, as well as for the additional limitations they recite.

Claim 42 has been amended to recite, in part, "performing a hydrogen treatment to increase a hydrogen concentration of said cleaved main surface." As discussed previously with regard to claim 29, none of the cited references, either taken alone or in combination, teach or suggest this claim element. Thus, claim 42 should be allowed for at least this reason.

New Claims

Claims 43-45


Claims 43-45, which depend on claim 29, should be allowable for at least the reason stated above for claim 29, as well as for the additional limitations they recite.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,


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